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EXAMINER

DUONG, THANH P

ART UNIT

PAPER NUMBER

1797

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/742,126	<b>Applicant(s)</b> FERRON ET AL.	
	<b>Examiner</b> TOM P. DUONG	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 29-37, 39-59, 61, 66-88, 90 and 91 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 87 is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☒ Claim(s) 52 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### **Continued Examination Under 37 CFR 1.114**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 8, 2008 has been entered.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 66-81, 88, and 90-91 are rejected under 35 U.S.C. 102(b) as being anticipated by Endoh et al. (6,234,787).

Regarding claims 66-68, 76-78, 88, and 90-91, Endoh et al. discloses an apparatus (Figs. 3 and 4) for use during the abatement of a semiconductor manufacturing process comprising: a thermal reaction chamber (1) having: an interior porous wall (12) that defines a central chamber; at least one waste gas inlet (25) in fluid communication with the central chamber and adapted to introduce a gaseous waste stream to the central chamber; at least one fuel inlet (30) for introduction of adapted to introduce a fuel gas for mixing with the gaseous waste stream into the central chamber, where the fuel inlet (30) is positioned to introduce fuel through a path that does not pass

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through pores of the porous wall (12); at least one oxidant inlet (air) adapted to introduce an oxidant into the central chamber, where the oxidant inlet is positioned to introduce oxidant through a path that does not pass through pores of the porous wall (12); a thermal mechanism (abstract) positioned within the central chamber and adapted to form reaction products from the gaseous waste stream within the central chamber; and a fluid delivery system adapted to provide a fluid to the central chamber through the interior porous wall at a sufficient force to reduce deposition of reaction products on an inner surface of the interior porous wall of the central chamber (Figs. 3 and 4).

Regarding claim 69, Endoh et al. discloses at least one fluid (4,9) is introduced thru the interior space and the recitation of “introducing a fluid into the interior space is adapted to introduce water ” is directed to the contents thereof during an intended operation and does not impart further structural limitation to the claimed invention. See *Ex Parte Thibault*, 164 USPQ 666, 667, (Bd. App. 1969); therefore, Endoh et al. continues to read on the apparatus of the claimed invention.

Regarding claims 70-74, the recitation of introducing “fluid into the interior space under pulsing conditions or periodic condition” and “operating pressure” does not further limit structural limitation to the claim; therefore, Endo et al. continues to read on the apparatus of the claimed invention. Furthermore, such recitations are directed to the manner of operating the device. Note, the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP 2114 and 2115. Further, the

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examiner notes that process limitations do not have patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states (Expressions relating the apparatus to contents thereof and to an intended operation are no significance in determining patentability of the apparatus claim."

Regarding claims 75, and 79-81, the apparatus of Endoh et al. is substantially the same as that of the instant claims, but is silent as to whether there may be more than one inlet. However, it would have been obvious to one having ordinary skill in the art to provide more than one inlet to facilitate in mixing the fluids in the apparatus of Bartz since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 29-36, 39-49, 82-85, and 94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endoh et al. (6,234,787) in view of Bartz et al. (5,510,093).

Regarding claims 29, 39, 43-46, 82-85, and 94, Endoh et al. discloses a two-stage reactor for removing pollutants from gaseous streams, the two-stage reactor

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comprising: a) an upper thermal reaction chamber (1) comprising: i) an outer exterior wall (11); ii) an interior ceramic porous wall (12), wherein the interior porous wall defines a central chamber, and wherein the interior porous wall (12) is positioned from the outer exterior wall (11) a sufficient distance to define an interior space (15); iii) at least one waste gas inlet (25, 27-30) in fluid communication with the central chamber for introducing a gaseous waste stream therein; iv) a fuel inlet (30) for introduction of adapted to introduce a fuel gas for mixing with the gaseous waste stream into the central chamber, where the fuel inlet is positioned to introduce fuel through a path that does not pass through pores of the porous wall (Figs. 3 and 4); v) an oxidant inlet (air) adapted to introduce an oxidant into the central chamber, where the oxidant inlet (air) is positioned to introduce oxidant through a path that does not pass through pores of the porous wall (12) introduction of an oxidant for mixing with the gaseous waste stream; vi) thermal means (abstract) for forming reaction products from the gaseous waste stream; and vii) means for introducing a fluid into the interior space, wherein the interior porous wall (12) provides for transference of the fluid from the interior space into the central chamber at a sufficient force to reduce deposition of reaction products on the interior porous wall; and b) a lower reaction chamber (20) comprising: i) a gas flow chamber in fluid communication with the central chamber comprising an inlet and outlet for passing the gaseous waste stream and reaction products therethrough;

Endoh et al. essentially discloses the features of the claimed invention except a means for generating a downwardly flowing liquid film on interior surfaces of the gas

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flow chamber thereby reducing deposition and accumulation of particulate solids thereon.

Bartz et al. teaches the benefits of providing a lower reaction chamber (50) with water trough (51) to provide a continuous flow of water down the inner surface of column (50) thereby cooling the combustion product stream leaving zone (31) and preventing particles in the stream from adhering to the inner surface of column (50).

Thus, it would have been obvious in view of Bartz et al. to one having ordinary skill in the art to modify the device of Endoh et al. with means for generating a downwardly flowing liquid film on the interior surfaces as taught by Bartz et al. in order to gain the above benefits.

Regarding claim 30, Endoh et al. discloses the interior space (15) positioned between the outer exterior wall (11) and the interior porous wall (12) is an interior annular space.

Regarding claim 31, Endoh et al. discloses the means for introducing a fluid (4) into the interior space is adapted to introduce pressurized fluid into the interior annular space.

Regarding claim 32, Endoh et al. discloses the means (4) for introducing a fluid into the interior space is adapted to introduce fluid selected from the group consisting of water, steam, an inert gas, a heated gas, air, clean dry air, and clean enriched air.

Regarding claim 33, Endoh et al. discloses least one fluid (4, 16) is introduced thru the interior space and the recitation of “introducing a fluid into the interior space is adapted to introduce water ” is directed to the contents thereof during an intended

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operation and does not impart further structural limitation to the claimed invention. See *Ex Parte Thibault*, 164 USPQ 666, 667, (Bd. App. 1969); therefore, Endoh et al. continues to read on the apparatus of the claimed invention

Regarding claims 34-36, 47-48, the recitation of introducing "fluid into the interior space under pulsing conditions or periodic condition" and "operating pressure" does not further limit structural limitation to the claim; therefore, Endoh et al. continues to read on the apparatus of the claimed invention. Furthermore, such recitations are directed to the manner of operating the device. Note, the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP 2114 and 2115. Further, the examiner notes that process limitations do not have patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states (Expressions relating the apparatus to contents thereof and to an intended operation are no significance in determining patentability of the apparatus claim."

Regarding claim 40, Bartz et al. discloses a means (via 52) for introducing a fluid tangentially into the interior space to create a vortex fluid.

Regarding claims 41 and 42, Bartz et al. discloses the liquid vortex (via 52) is introduced to the concentric chamber (chamber between cooling column 50 and annular trough 51) with baffle (upper portion of 50) and the liquid overflow the interior surface of the concentric chamber (Col. 5, lines 30-46). With respect to the "conical-shaped baffle," the shape of the baffle is not considered to confer patentability to the claim. It would have been an obvious matter of engineering choice to select an appropriate



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shape for the baffle, such as the one having conical shape on the basis of its suitability for the intended use as a matter of obvious engineering choice and since such a modification would have involved a mere change in the shape of a component. A change in shape is generally recognized as being within the level of ordinary skill in the art, absence showing any unexpected results. *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

Regarding claim 49, Endoh et al. discloses the porous wall with apertures and it would have been obvious matter of engineering choice to provide various shapes of the apertures including conical shaped protuberances since it has been held in the art that a change in shape is within the level of ordinary skill in the art.

3. Claims 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applied references (Endoh et al. and Bartz et al.) as applied to claim 29 above, and further in view of Ping-Chung et al. (6,187,080).

Regarding claim 37, the applied references essentially disclose the features of the claimed invention except a lower reaction chamber with includes at least one oxidant inlet positioned to introduce an oxidant to the gas flow chamber. Ping-Chung et al. '080 teaches that it is desirable to provide a gas vortex means 37 or oxidant in the lower chamber to minimize waste powder or solid deposition at the outlet 122. Thus, it would have been obvious in view of Ping-Chung et al. '080 to one having ordinary skill in the art to modify the apparatus of the applied references with at least one oxidant as

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taught by Ping-Chung et al. in order to minimize solid deposition in the outlet of the upper reaction chamber.

4. Claims 50-51, 53-59, 61, and 86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endoh et al. '093 in view of Ping-Chung et al. (6,187,080).

Regarding claims 50, 51, 53, 55, 61, and 86, Endoh et al. discloses an abatement system (Figs. 3 and 4) for treating gaseous pollutants in a gaseous waste stream, the system comprising: a) an upper thermal reaction chamber (1) comprising: i) an outer exterior wall (11); ii) an interior porous wall (12), wherein the interior porous wall defines a central chamber and wherein the interior porous wall is positioned from the outer exterior wall a sufficient distance to define an interior annular space; iii) means (25, 27-30, 4, 9) for introducing a fluid to the interior annular space; iv) thermal means (abstract) for forming reaction products from the gaseous waste stream; and v) at least one waste gas inlet (25) for conducting the gaseous waste stream into the upper thermal reactor (1) ; vi) at least one fuel inlet (25) for introduction of adapted to introduce a fuel gas for mixing with the gaseous waste stream into the central chamber, where the fuel inlet (25) is positioned to introduce fuel through a path that does not pass through pores of the porous wall; vii) at least one oxidant inlet (4) adapted to introduce an oxidant into the central chamber, where the oxidant inlet is positioned to introduce oxidant through a path that does not pass through pores of the porous wall introduction of an oxidant for mixing with the gaseous waste stream; and b) a lower reaction chamber comprising (20): i) a gas flow chamber in fluid communication with the central chamber.

Endoh et al. essentially discloses the features of the claimed invention except a lower reaction chamber with includes at least one oxidant inlet positioned to introduce an oxidant to the gas flow chamber. Ping-Chung et al. '080 teaches that it is desirable to provide a gas vortex means 37 or oxidant in the lower chamber to minimize waste powder or solid deposition at the outlet 122. Thus, it would have been obvious in view of Ping-Chung et al. '080 to one having ordinary skill in the art to modify the apparatus of the Endoh et al. with at least one oxidant as taught by Ping-Chung et al. in order to minimize solid deposition in the outlet of the upper reaction chamber.

Regarding claim 54, the specific porous of the interior wall is not considered to confer patentability to the claim. The precise porosity of the interior porous wall would have been considered a result effective variable by one having ordinary skill in the art. As such, without more, the claimed porosity of the interior porous wall cannot be considered be "critical". Accordingly, one having ordinary skill in the art would have routinely selected an appropriate type of interior porous wall with an appropriate porosity, such as the one taught by Endoh et al., so as to optimize the flame temperature for the interior porous wall. (*In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)), and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233).

Regarding claim 56-58, Endoh et al. discloses at least one fluid (4,9) is introduced thru the interior space and the recitation of "introducing a fluid into the interior space is adapted to introduce water " is directed to the contents thereof during

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an intended operation and does not impart further structural limitation to the claimed invention. See *Ex Parte Thibault*, 164 USPQ 666, 667, (Bd. App. 1969); therefore, Endoh et al. continues to read on the apparatus of the claimed invention.

Regarding claim 59, the recitation of introducing “fluid into the interior space under pulsing conditions or periodic condition” and “operating pressure” does not further limit structural limitation to the claim; therefore, Endoh et al. continues to read on the apparatus of the claimed invention. Furthermore, such recitations are directed to the manner of operating the device. Note, the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP 2114 and 2115. Further, the examiner notes that process limitations do not have patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states (Expressions relating the apparatus to contents thereof and to an intended operation are no significance in determining patentability of the apparatus claim.

### ***Allowable Subject Matter***

Claim 52 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 87 is allowed.

***Response to Arguments***

Applicant's arguments with respect to claims 29-37, 39-59, 61, 66-88, 90-91, and 94 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TOM P. DUONG whose telephone number is (571)272-2794. The examiner can normally be reached on 8:00AM - 4:30PM (IFP).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tom P Duong/  
Patent Examiner, Art Unit 1797